REMARKS

This amendment is responsive to the Office Action of May 1, 2008. Reconsideration and allowance of claims 1-6 and 8-10 are requested.

The Office Action

Claims 1-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Saho (US 5,443,548) in view of Morishita (US 6,233,948) or over Rudebeck (US 4,461,635) in view Dresens (US 7,127,901).

The Present Application

In the present application, gaseous helium is pumped through conduits **12** and **14**. The medium used for cooling the cryopump is not a liquid.

One compressor means **16** is used for a number of cryopumps **10**. At a normal processing stage of the cryopumps, the capacity of the compressor is sufficient to supply enough helium to all of the cryopumps. If the temperature of one of the cryopumps rises unexpectedly, the valve **26** located in the bypass is opened so that a larger amount of helium is pumped to that cryopump. Generally, only one or two cryopumps need to be cooled rapidly. The other cryopumps are working in another temperature level and, on average, only a relatively small amount of helium is provided to these pumps. This gives rise to the important advantage that a relatively small compressor can be used for a large number of cryopumps because it is not necessary to provide a huge amount of helium to cool all of the cryopumps down rapidly.

Please note that the valve located in the bypass is not an expansion-valve nor is the throttle device. The expansion valve is located within the cryopump. The adjusting means **18** is in addition to the expansion valve typically found in a cryopump. The valve located in the bypass and the throttle device are only used to regulate the volume of helium supplied to each cryopump.

The References of Record

Saho describes a system having a plurality of cryopumps in which liquid helium is used. Rather than disclosing a vacuum system, Saho discloses a system having a plurality of neutral beam injection apparatuses disposed around a nuclear fission apparatus.

Moreover, there is no bypass valve that can be opened to rapidly cool down one of a plurality of cryopumps. Valves **22** and **55** referenced by the Examiner operate in a different manner. Valve **55** is open and valve **22** is closed to bring the temperature in the cryopanel down from about 80° K to 10° K (column 8, lines 6-15).

To bring the cryopanels from 10° K down to 3.7° K, the valve **55** is closed and the JT valve **22** is opened such that the supplied helium now flows through the heat exchanger **21** (column 8, lines 23-29). Thus, valves **22** and **55** are used alternately to switch the heat exchanger **21** in or out of the circuit, each to control a different range of the cooling cycle.

Both **Morishita** and **Dresens** merely show that controllers which control a number of cryopumps are known in the art, but do not address the limitations of the claims.

Rudebeck does not describe a vacuum pump with a cryopump. Rather, Rudebeck describes a device for drying and separating media. In a cooling mode, valve **9** is open and valve **16** is closed in order to supply compressed media to an expansion valve **10**. During a defrost cycle, the valve **9** is closed and the valve **16** is opened to supply hot gas for defrosting (column 3, lines 23-26). Thus, valve **9** controls the cooling cycle; whereas, valve **16** controls a defrosting cycle.

The Claims Distinguish Patentably Over the References of Record

Claim 1 calls for at least two of the cryopumps to include an adjusting means for controlling an amount of media fed to a corresponding cryopump during cooling. The adjusting means includes a throttle device which supplies the corresponding cryopump with a first amount of the media, e.g., for normal operation, and a valve in a bypass line to increase the supply of media to the corresponding cryopump. By contrast, in Saho, either valve **55** is open and valve **22** is closed, or

valve **22** is open and valve **55** is closed. Neither valve functions to increase the supply of media to the corresponding cryopump.

Rather valves **22** and **55** of Saho serve to switch heat exchanger **21** into and out of the fluid circuit. In Rudebeck, either valve **9** is open and valve **16** is closed, or valve **16** is open and valve **9** is closed. Neither is used to supply additional media to the corresponding cryopump. Moreover, valve **9** supplies cooling media; whereas, valve **16** provides heating media.

Claim 1 further calls for the controller to control the valve in the bypass conduit to increase the media supplied and reduce the temperature of the corresponding cryopump. Again, in Saho, valves **22** and **55** are used to channel the media flow either through the heat exchanger **21** or to bypass the heat exchanger **21**. There is no valve used to increase the amount of media supplied by a throttle device.

In Rudebeck, valve **16** and valve **9** are never opened at the same time. One is opened to enable the cooling cycle, the other to enable the defrost cycle. Moreover, opening valve **16** will not reduce the temperature of the evaporator **11**. Rather, valve **16** causes the evaporator **11** to be heated for defrosting.

Accordingly, it is submitted that **claim 1 and claims 2-6 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 8 has been placed in independent form. Claim 8 calls for the controller to cause each valve assembly to supply a preselected amount of cooling medium when the sensed temperature is below a target and increase the amount of supplied cooling medium when the temperature is warmer than the target. In Saho, either valve **22** or valve **55** supplies a selected amount of cooling medium. The other never functions to increase the amount of supplied cooling medium. Rather, valve **55** of Saho provides cooling medium which has bypassed the heat exchanger **21** and valve **22** supplies the same cooling medium, but that has gone through heat exchanger **21**.

In Rudebeck, valve **16** is not used to increase the amount of cooling medium supplied by valves **9** and **10**. Rather, valve **16** is used to provide a heating medium. Morishita and Dresens do not address or cure these shortcomings of Saho and Rudebeck.

Accordingly, it is submitted that **claim 8 and claim 9 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 10 calls for a controller programmed to control the valve assemblies to supply a preselected amount of cooling medium when the sensed temperature is below a target temperature and to supplement the amount of cooling medium when the sensed temperature is warmer than the target temperature. In Saho, neither valve **22** nor valve **55** supplements the other. Rather, one valve, or the other, supplies the coolant. Neither increases an amount of supplied cooling medium. In Rudebeck, valve **16** supplies a heating medium. Neither Morishita, nor Dresens cure these shortcomings of Saho and Rudebeck.

Accordingly, it is submitted that **claim 10** distinguishes patentably and unobviously over the references of record.

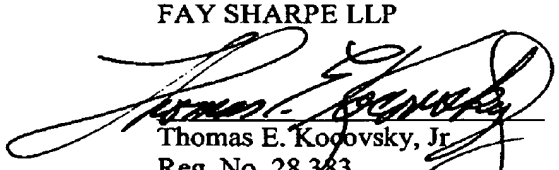
CONCLUSION

For the reasons set forth above, it is submitted that claims 1-6 and 8-10 distinguish patentably and unobviously over the references of record. An early allowance of claims 1-6 and 8-10 is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

FAY SHARPE LLP



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